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TRANSMITTAL
FORM

Application Serial Number	09/352,976
Filing Date	July 14, 1999
First Named Inventor	Gilbert
Group Art Unit	1771
Examiner Name	Change, Victor S.
Attorney Docket No.	EIC-001
Patent No.	Not applicable
Issue Date	Not applicable

ENCLOSURES (check all that apply)

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Fee Transmittal Form
<input checked="" type="checkbox"/> Check Attached
<input type="checkbox"/> Copy of Fee Transmittal Form

<input type="checkbox"/> Amendment/Response
<input type="checkbox"/> Preliminary
<input type="checkbox"/> After Final
<input type="checkbox"/> Affidavits/declaration(s)
<input type="checkbox"/> Letter to Official Draftsperson including Drawings [Total Sheets _____]

<input type="checkbox"/> Petition for Extension of Time

<input type="checkbox"/> Information Disclosure Statement
<input type="checkbox"/> Form PTO-1449
<input type="checkbox"/> Copies of IDS Citations

<input type="checkbox"/> Certified Copy of Priority Document(s)

<input type="checkbox"/> Sequence Listing submission
<input type="checkbox"/> Paper Copy/CD
<input type="checkbox"/> Computer Readable Copy
<input type="checkbox"/> Statement verifying identity of above | <input type="checkbox"/> Copy of Notice to File Missing Parts of Application

<input type="checkbox"/> Formal Drawing(s)

<input type="checkbox"/> Request For Continued Examination (RCE) Transmittal

<input type="checkbox"/> Power of Attorney (Revocation of Prior Powers)

<input type="checkbox"/> Terminal Disclaimer

<input type="checkbox"/> Executed Declaration and Power of Attorney for Utility or Design Patent Application

<input type="checkbox"/> Small Entity Statement

<input type="checkbox"/> CD(s) for large table or computer program

<input type="checkbox"/> Amendment After Allowance

<input type="checkbox"/> Request for Certificate of Correction
<input type="checkbox"/> Certificate of Correction (in duplicate) | <input type="checkbox"/> Notice of Appeal to Board of Patent Appeals and Interferences

<input checked="" type="checkbox"/> Appeal Brief (17 pages) (in triplicate)

<input type="checkbox"/> Status Inquiry

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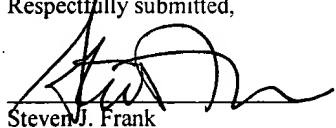
<input type="checkbox"/> Certificate of Facsimile Transmission under 37 C.F.R. 1.8

<input type="checkbox"/> Additional Enclosure(s) (please identify below) |
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CORRESPONDENCE ADDRESS

Direct all correspondence to: Patent Administrator
 Goodwin Procter LLP
 Exchange Place
 Boston, MA 02109
 Tel. No.: (617) 570-1000
 Fax No.: (617) 523-1231
 Customer No. 051414

SIGNATURE BLOCK

Respectfully submitted,

 Steven J. Frank
 Atty/Agent for Applicant(s)
 Goodwin Procter LLP
 Exchange Place
 Boston, MA 02109

Date: May 26, 2006
 Reg. No. 33,497
 Tel. No.: (617) 570-1241
 Fax No.: (617) 523-1231

Complete if Known	
Application Serial Number	09/352,976
Filing Date	July 14, 1999
First Named Inventor	Gilbertt
Group Art Unit	1771
Examiner Name	Chang, Victor S.
Attorney Docket No.	EIC-001

FEE CALCULATION (continued)

- ### 3. ADDITIONAL FEES

Large Entity Fee (\$)	Small Entity Fee (\$)	Fee Description	Fee Paid
130	65	Surcharge - late filing fee or oath	
50	25	Surcharge - late provisional filing fee or cover sheet	
130	130	Non-English specification	
2,520	2,520	Request for ex parte reexamination	
120	60	Extension for reply within first month	
450	225	Extension for reply within second month	
1020	510	Extension for reply within third month	
1590	795	Extension for reply within fourth month	
2160	1080	Extension for reply within fifth month	
500	250	Notice of Appeal	
500	250	Filing a brief in support of an appeal	\$250.00
1000	500	Request for oral hearing	
400	400	Petitions to the Commissioner (Gp. I)	
200	200	Petitions to the Commissioner (Gp. II)	
130	130	Petitions to the Commissioner (Gp. III)	
180	180	Submission of Information Disclosure Statement	
790	395	Filing a submission after final rejection (37 CFR 1.129(a))	
790	395	For each additional invention to be examined (37 CFR 1.129(b))	
100	100	Certificate of Correction for applicant's error	
130	65	Submission of Terminal Disclaimer	
Other fee (Specify)			

1. FILING/SEARCH/EXAM/SIZE FEES

Large Entity

Fee (\$)	Fee Description	Fee Paid
300	Utility filing fee	
500	Utility search fee	
200	Utility exam fee	
250	Utility size fee (each add'l 50 pgs. over 100)	
200	Design filing fee	
100	Design search fee	
130	Design exam fee	
250	Design size fee (each add'l 50 pgs. over 100)	

	Number Filed	Number Extra	Rate	Amount
Total Claims	25	- 20 = 5	x \$ 50.00 =	250.00

Independent		
Claims	- 3 =	x \$200.00 =
<input type="checkbox"/> Multiple Dependent Claim(s), if any		\$360.00 =

SMALL ENTITY DISCOUNT:

SUBTOTAL (1)	(\$)	0.00
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2. AMENDMENT CLAIM FEES

Claims Remaining After Amend.	Highest No. Previously Paid For	Present Extra	Rate	Fee Paid
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Total	-	=	x \$ 50.00 =
Indep.	-	=	x \$200.00=

Indep. - = x \$200.00=

☐ First Presentation of Multiple Dep. Claim + \$360.00=

TOTAL: (\$)

SMALL ENTITY DISCOUNT:	(0)
	(\$)

SUBTOTAL (2)	(\$0.00
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Direct all correspondence to:

Patent Administrator
Goodwin Procter LLP
Exchange Place
Boston, MA 02109
Tel. No.: (617) 570-1000
Fax No.: (617) 523-1231
Customer No. 051414

SIGNATURE BLOCK

Respectfully submitted,

Date: May 26, 2006
Reg. No.: 33,497
Tel. No.: (617) 570-1057
Fax No.: (617) 523-1241

Steven J. Frank
Attorney for the Applicants
Goodwin Procter LLP
Exchange Place
Boston, MA 02109



PATENT
Attorney Docket No. EIC-001

***IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES***

APPLICANTS: Michael D. Gilbert
SERIAL NO.: 09/352,976 GROUP NO.: 1771
FILING DATE: July 14, 1999 EXAMINER: Victor S. Chang
TITLE: Electrically Disbonding Materials

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL

This Appeal Brief is submitted in accordance with 37 C.F.R. § 41.37.

REAL PARTY IN INTEREST

The real party in interest is the owner of the present application, EIC
Laboratories, Inc.

RELATED APPEALS AND INTERFERENCES

No other appeals or interferences directly affect or will be directly affected by the
Board's decision in the present appeal.

STATUS OF CLAIMS

The application as filed contained 59 claims. Claims 1, 4-6, 8, 9, 14-26, 28-30, 32, and 66-81 remain pending. Of these, all claims except claim 81 (which has been allowed) remain rejected. Accordingly, claims 1, 4-6, 8, 9, 14-26, 28-30, 32, and 66-80 are the subject of this appeal.

STATUS OF AMENDMENTS

No amendments have been filed subsequent to the Office Action mailed on January 31, 2006.

SUMMARY OF CLAIMED SUBJECT MATTER

In general, the invention relates to materials that may be disbonded from a surface to which they are applied without harm to that surface.¹ In particular, the compositions recited in independent claim 1 include a polymer (in some claims characterized as a “matrix functionality”²) and an electrolyte. The composition exhibits sufficient ionic conductivity to enable a faradaic reaction at a bond formed between the composition and an electrically conductive surface, thereby allowing the composition to disbond from the surface.³

In independent claim 30, the polymeric material comprises an epoxy, and the electrolyte is selected from the group consisting of ion solvating molecules, oligomers

¹ Specification at page 1, lines 10-12.

² See claim 9.

³ Specification at paragraph bridging pages 3-4.

and polymers, and ionomers. The composition, when cured, can form adhesive bonds with an electrically conductive surface. The adhesive bonds have a shear strength of greater than 200 psi, and once again, the composition has sufficient ionic conductivity to support a faradaic reaction. This reaction weakens the adhesive bond.

Independent claim 68 recites an electrochemically disbondable composition bonded to a first electronically conducting surface and comprising an adhesive, which incorporates an electrolyte imparting sufficient ionic conductivity to the composition to support a faradaic reaction at the bond between the composition and the electronically conducting surface. A voltage is applied across the bond between the first surface and the composition induces the composition to disbond from the first surface.

As explained in the specification, the term “faradaic reaction” means an electrochemical reaction in which a material is oxidized or reduced.⁴ In a typical application, the electrochemically disbondable composition of the invention joins first and second electrically conductive surfaces. The surfaces remain securely joined until an electric current is passed through the disbondable composition to cause a faradaic reaction, whereby the bond is weakened.⁵ Typically, the surfaces may then be separated easily by hand. Because the disbonding procedure uses electricity instead of heat or chemical reagents, inadvertent disbonding during normal use is unlikely.⁶

⁴ Specification at page 4, lines 18-19.

⁵ Specification at page 7, lines 2-8.

⁶ Specification at page 7, lines 9-16.

GROUND FOR REJECTION TO BE REVIEWED ON APPEAL

The issues on appeal are whether claims 1, 4-6, 8, 9, 14-26, 28-30, 32, and 68-80 are unpatentable under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,441,830 to Moulton et al. (“Moulton”) as “evidenced by” U.S. Patent No. 5,565,284 to Koga (“Koga”).⁷

ARGUMENT

I. Neither Moulton nor Koga is Relevant to the Present Invention

In the Office Action dated August 26, 2005 (the “8/26/05 Office Action”), the Examiner contends that the disclosure of Moulton satisfies the limitations of the present claims with regard to the polymer, “which acts to bind the composite materials together,” and the electrolyte.⁸ The Examiner expressly concedes that Moulton “lacks an express teaching” of the most critical limitation in each of the present claims, namely, “that the composite electrode is electrically disbondable by a faradaic reaction at bonding interface.”⁹ The importance of this omission cannot be overstated. It is *the* critical characteristic of the invention that compositionally distinguishes it from conventional adhesives and coatings.

The Examiner offers no evidence that the composition of Moulton supports a faradaic reaction. Rather, he improperly *infers* this feature from an “implicit” teaching of

⁷ In the Office Action dated August 26, 2005, only the prior-art rejections of claims 1, 5, 6, 8, 9, 14-22, 25, 28-30, and 32 were mentioned. However, the final Office Action dated January 31, 2006 rejects claims 1, 5, 6, 8, 9, 14-22, 25, 28-30, 32, and 68-80 “under 35 U.S.C. 102(b) as being anticipated by [Moulton], and evidenced by [Koga], generally as set forth in section 7 of Office actions dated 8/26/05 and 3/22/05[.]”

⁸ 8/26/05 Office Action at 3.

Moulton and some passages from Koga. In fact, nothing in Moulton or Koga is even remotely relevant to the claimed invention; both the Examiner's inference and the premises upon which he bases it are flawed. Before explaining why, however, it is important to properly characterize the Examiner's argument. The Examiner does not purport to locate the critical feature of the invention in the express teaching of Moulton or Koga. Rather, the Examiner's argument is ultimately based on *inherency* — i.e., that the “structure and composition” of Moulton's teachings implicitly anticipates the present claims.

To establish inherency, the extrinsic evidence “must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). Moreover, the basis for inherency must be clear; the Federal Circuit has repeatedly held that the relevance of a reference cannot be predicated on “mere conjecture.” *In re Robinson W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851, 105 S.Ct. 172 (1984); *Continental Can*, *supra*, 948 F.2d at 1268, 20 USPQ2d at 1749 (Fed. Cir. 1991). *See also In re Robertson*, 49 USPQ2d 1949 (1999).

In the present case, not only has the Examiner failed to satisfy the stringent criteria for an inherency rejection; he has not even cited anything relevant to the claims he has rejected. The Examiner “notes that Moulton's teaching methods for enhancing the

⁹ *Id.*

adhesion of composite electrodes onto conductive foils implicitly teaches that while the bond can be enhanced, eventually it can be disbonded, i.e., disbondable.”¹⁰ This is mere wordplay: any bond is “disbondable” given enough effort, and Applicant does not purport to have invented an adhesive that can be formulated to fail. Rather, the claims recite a composition that *enables a faradaic reaction* so as to allow the composition to disbond.¹¹ There is nothing in Moulton that even hints at this possibility.

Indeed, recognizing that “Moulton lacks an express teaching that the composite electrode is electrically disbondable by a faradaic reaction at bonding [sic] interface,”¹² he cites the Koga patent. According to the Examiner, Koga “expressly teaches that a charge-discharge cycle exacerbates [sic] the interfacial adhesion (bond) between the current collector and the electrode layer.”¹³ In fact, Koga is irrelevant to the Moulton patent because, like Moulton, it does not teach disbonding via a faradaic reaction at the current collector/electrode interface. In fact, Koga is explicitly concerned with charge-discharge cycles of the active electrode material; electrolytic reactions occur at the electrode/electrolyte interface — i.e., *not* where disbonding occurs. As explained in the declaration of A.C. Makrides,¹⁴ a composite electrode is not electrochemically disbondable via a faradaic reaction at the current collector because the electrode is

¹⁰ 8/26/05 Office Action at page 4 (emphasis in original).

¹¹ Specifically, claim 1 states: “wherein the electrolyte provides sufficient ionic conductivity to said composition to enable a faradaic reaction at a bond formed between the composition and an electrically conductive surface and allow the composition to disbond from said surface”; claim 30 states: “said composition has sufficient ionic conductivity to support a faradaic reaction at said electrically conductive surface, said faradaic reaction weakening said adhesive bonds”; and claim 68 requires “an electrolyte imparting sufficient ionic conductivity to said composition to support a faradaic reaction at the bond between the composition and the electronically conducting surface when a voltage is applied across the bond between the first surface and the composition, thereby inducing the composition to disbond from the first surface.”

¹² 8/26/05 Office Action at page 3.

¹³ *Id.*

necessarily an electronic conductor. As such, it cannot support a potential difference at the current collector interface, which is crucial for a faradaic reaction to take place. However Koga's bond is weakened, it is not via a faradaic reaction.¹⁵

In short, the references cited by the Examiner are not germane to the present claims, whether considered alone or in combination. Certainly they do not meet the demanding standards of inherency.

II. Moulton's Compositions Do Not Fall Within the Present Claims

In the Office Action dated March 22, 2005 (the "3/22/05 Office Action"), the Examiner states that Moulton's "composite cathode can comprise a compatible cathodic material, an electrolytic solvent, an alkali salt, a solid matrix forming polymer[, and] film forming agents such as polyethylene oxide, polypropylene oxide, etc. ... Suitable electrolytic solvents include propylene carbonate, ethylene carbonate, etc."¹⁶ The Examiner thereby suggests that the compositions disclosed in Moulton fall within the present claims.

In fact, they do not. The present claims cover compositions with specific electrical properties (disbonding by a faradaic reaction) that are lacking in Moulton's compositions. Like all composite electrodes, those described by Moulton are electronic

¹⁴ Declaration of A.C. Makrides, filed June 22, 2005, at ¶12.

¹⁵ In fact, as explained by Dr. Makrides in ¶11 of his declaration, "Koga is describing a bulk effect, the expansion and contraction of lithiated and delithiated electrode material which leads to fracture of the material and shedding in Koga's words, of 'fine particles.' As he points out, this is a result of 'numerous repetition of charge-discharge cycles' (Col. 1, line 42) and is unrelated to" disbonding induced by a faradaic reaction at the electrode/collector interface.

conductors. They must be — otherwise it would not be possible to extract an electric current from a battery. Specifically, Moulton contemplates an electrically conducting adhesion promoter containing 30-80 wt% of “a conductive material”¹⁷ and conventionally conductive cathodes and anodes.¹⁸ The faradaic reaction required by the present claims, by contrast, *cannot be supported* by an electronic conductor. Therefore, the compositions recited in the present claims differ critically from those of Moulton. To use an analogy, a semiconductor material such as silicon can be doped at such levels that the resulting composition is no longer a semiconductor; a claim reciting a semiconductor would no more read on such compositions than the present claims read on Moulton’s.

III. The Examiner Ignores Key Limitations in the Claims

The Examiner seems to perceive the inadequacy of the cited art in making repeated reference to what he regards as deficiencies in the claim language. At page 4 of the 8/26/05 Office Action, the Examiner chides Applicant for “fail[ing] to point any distinct structure and/or composition features in the claim to preclude the prior art” (emphasis in original). At page 5, he “respectfully reminds Applicant that the preamble in claim 1 is directed to a composition, which is read upon [sic] by Moulton,” and “the fact that it can be disbonded easily and reliable [sic] is not recited in any claims of present [sic] application.” On the same page he states that the fact that Moulton’s

¹⁶ 3/26/05 Office Action at pages 3-4 (emphasis in original).

¹⁷ Moulton at col. 2, lines 54-59.

¹⁸ *Id.* at col. 12, lines 9-25 and col. 13, lines 4-12.

invention is “disbondable at interface” (emphasis in original) and therefore meets the limitations of claim 1.

Although the Examiner appears to argue that his rejections follow from the claim language, in fact he ignores the critical claim limitations entirely. These limitations, present in every independent claim, require enablement or support of a faradaic reaction at the adhesive bond to an electrically conducting surface. These limitations are entirely unaddressed by the Examiner in his every reference to supposed shortcomings of the claim language.

This is clear error. The burden is on the Examiner to demonstrate that each feature of a claim is met by a reference or valid combination of references. The courts have repeatedly and consistently held that “all limitations [of a claim] must be considered ... and it is error to ignore specific limitations in distinguishing over the references.” *In re Boe and Duke*, 184 USPQ 38, 40 (CCPA 1974). Anticipation under 35 U.S.C. §102 requires that each and every element as set forth in Applicant’s claim be found in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). *See also* M.P.E.P. §2131.


The Examiner purports to find fault with the claim language, suggesting excessive breadth, but in fact the fault lies with the Examiner’s failure to give weight to the key limitations.

CONCLUSION

For all of the foregoing reasons, we submit that the Examiner's rejections of claims 1, 4-6, 8, 9, 14-26, 28-30, 32, and 66-80 were erroneous, and reversal thereof is respectfully requested.

Accompanying this brief is the fee specified in 37 C.F.R. §1.17(f). Please charge any additional fee occasioned by this paper to our Deposit Account No. 07-1700.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Steven J. Frank", is written over a horizontal line.

Date: May 26, 2006

Steven J. Frank
Reg. No. 33,497
Goodwin | Procter LLP
Exchange Place
Boston, MA 02109
Tel. No. (617) 570-1241
Fax No. (617) 523-1231

CLAIMS APPENDIX

1. An electrochemically disbondable composition, comprising:
a polymer; and
an electrolyte, wherein the electrolyte provides sufficient ionic conductivity to said composition to enable a faradaic reaction at a bond formed between the composition and an electrically conductive surface and allow the composition to disbond from said surface.
- 2-3. (Cancelled).
4. The composition of claim 1, wherein said polymer has a variable crosslink density to form regions of low crosslink density having a relatively high ionic conductivity and regions of high crosslink density having a relatively high mechanical strength.
5. The composition of claim 1, wherein said polymer includes coordination sites that are capable of solvating ions and that support the electrolyte functionality of said composition.
6. The composition of claim 5, wherein said coordination sites are selected from the group consisting of alkoxy moieties, disulfide moieties, thioalkyl moieties, nitrile moieties, and polyvinylidene fluoride moieties and derivatives thereof.
7. (Cancelled).
8. The composition of claim 1, wherein said electrolyte is localized in regions within said polymer to form a secondary phase with ionic conductivity.

9. The composition of claim 1, wherein said electrochemically disbondable composition is a phase separated material having first regions of substantially matrix functionality and second regions of substantially electrolyte functionality.

10-13. (Cancelled).

14. The composition of claim 9, wherein said electrolyte functionality comprises an ion solvating molecule that is selected from the group consisting of low molecular weight alkoxides, alcohols, alkyl carbonates, cyclic esters, nitriles, amides and ureas.

15. The composition of claim 9, wherein said phase separated material comprises a block or graft copolymer containing non-polar components and components of ionic conductivity.

16. The composition of claim 15, wherein said non-polar component of said block copolymer is selected to facilitate phase separation.

17. The composition of claim 1, further comprising a reservoir for containing curing or crosslinking agent.

18. The composition of claim 17, wherein the reservoir is selected from the group consisting of zeolites, clays and polymer gels.

19. The composition of claim 1 or 9, further comprising a salt capable of being solvated into said composition.

20. The composition of claim 19, wherein said salt is selected from the group consisting of alkali metal, alkaline earth and ammonium salts.

21. The composition of claim 19, wherein said salts include an anion selected from the group consisting of hexafluorophosphate, tetrafluoroborate, hexafluoroantimonate and perchlorate.

22. The composition of claim 19, wherein said salt is an ammonium salt and the ammonium cation is immobilized in said composition.

23. The composition of claim 1 or 9, wherein said composition has an ionic conductivity in the range of 10^{-11} S/cm to 10^{-5} S/cm.

24. The composition of claim 1 or 9, wherein said composition has an ionic conductivity in the range of 10^{-9} S/cm to 10^{-7} S/cm.

25. The composition of claim 1 or 9, further comprising an additive selected from the group consisting of pigments, corrosion inhibitors, leveling agents, gloss promoters, rubber tougheners and fillers.

26. The composition of claim 1 or 9, wherein said composition is an adhesive.

27. (Cancelled).

28. The composition of claim 1 or 9, wherein said composition is a coating.

29. The composition of claim 28, wherein said coating is resistant to delamination from a substrate to which it is applied.

30. A composition, comprising:
a curable polymeric material comprising an epoxy; and

an electrolyte located in said curable polymeric material, said electrolyte being selected from the group consisting of ion solvating molecules, oligomers and polymers, and ionomers,

wherein said curable polymeric material, when cured, can form adhesive bonds with an electrically conductive surface, said adhesive bonds having a shear strength of greater than 200 psi, and said composition has sufficient ionic conductivity to support a faradaic reaction at said electrically conductive surface, said faradaic reaction weakening said adhesive bonds.

31. (Cancelled).

32. The composition of claim 30, wherein the composition phase separates upon curing, said phase separated material having first regions of mechanical strength and second regions of ionic conductivity.

33-65. (Cancelled).

66. The composition of claim 30, wherein said curable polymeric material has an ionic conductivity in the range of 10^{-9} to 10^{-7} S/cm.

67. The composition of claim 1, wherein said composition has a shear strength greater than 200 psi.

68. An electrochemically disbondable composition bonded to a first electronically conducting surface and comprising an adhesive incorporating an electrolyte imparting sufficient ionic conductivity to said composition to support a faradaic reaction at the bond between the composition and the electronically conducting surface when a voltage is applied across the bond between the first surface and the composition, thereby inducing the composition to disbond from the first surface.

69. The composition of claim 68, wherein said adhesive is selected from the group consisting of epoxies, phenolics, acrylics, melamines, maleimides, polyurethanes, and combinations thereof.

70. The composition of claim 68, wherein said electrolyte is localized in regions within said polymer to form a secondary phase with ionic conductivity.

71. The composition of claim 70, wherein said electrolyte is selected from the group consisting of ion solvating molecules, oligomers, polymers, and ionomers.

72. The composition of claim 70, wherein said electrolyte comprises an ion solvating molecule that is selected from the group consisting of low molecular weight alkoxides, alcohols, alkyl carbonates, cyclic esters, nitriles, amides and ureas.

73. The composition of claim 68, further comprising a salt.

74. The composition of claim 73, wherein the salt is selected from the group consisting of alkali metal, alkaline earth, and ammonium salts.

75. The composition of claim 73, wherein the salt includes an anion selected from the group consisting of hexafluorophosphate, tetrafluoroborate, hexafluoroantimonate and perchlorate.

76. The composition of claim 73, wherein the salt is an ammonium salt and the ammonium cation is immobilized in said composition.

77. The composition of claim 68, wherein said composition has an ionic conductivity in the range of 10^{-11} S/cm to 10^{-5} S/cm.

78. The composition of claim 1, wherein a bond formed between the composition and an electrically conductive surface is substantially weakened by application of an electrical voltage of 50 volts after less than about 60 minutes.

79. The composition of claim 68, wherein the bond is substantially weakened by application of an electrical voltage of 50 volts after less than about 60 minutes.

80. The composition of claim 1, wherein the polymer constitutes at least 50% by weight of the composition.

81. The composition of claim 80, wherein the polymer constitutes at least 75% by weight of the composition.

EVIDENCE APPENDIX

There has been no evidence submitted under 37 C.F.R. 1.130, 1.131 or 1.32 in this case.

RELATED PROCEEDINGS APPENDIX

There have been no proceedings related to this case.